U.S. DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT Assistant Secretary for Housing-Federal Housing Commissioner	Series and Series Number: (Supersedes issue dated August 27, 1990) MATERIALS RELEASE NO. 1236a
TO: DIRECTORS, HOUSING DIVISION DIRECTORS, MULTIFAMILY DIVISION DIRECTORS, SINGLE FAMILY DIVISION	ISSUE DATE: October 28, 1997
	REVIEW DATE: October 28, 2000

SUBJECT: 1. Product

Jager Super I Joist

2. Name and Address of Manufacturer

Jager Industries, Inc.
8835 Macleod Trail, SW
Calgary, Alberta, Canada T2H 0M3

Data on the nonstandard product, described herein have been reviewed by the Department of Housing and Urban Development (HUD) and determination has been made that it is considered suitable from a technical standpoint for the use indicated herein. This Release does not purport to establish a comparative quality or value rating for this product as compared to standard products normally used in the same manner.

This Materials Release cannot be used as an indication of endorsement, or approval by HUD of the described product, and any statement or representation, however made, indicating such approval or endorsement by HUD is unauthorized. See Code 18, U.S.C. 709.

Any reproduction of this Release must be in its entirety.

USE: Floor joists and roof joists.

DESCRIPTION:

JSI Joists are structural elements manufactured using solid sawn flanges and structural panel webs, bonded together with exterior adhesives, forming an "I" cross-sectional shape.

JSI 20 I-Joists are fabricated with solid sawn Spruce-Pine-Fir flanges with a minimum size of 1 1/2 by 2 1/2 inches and an oriented strand board (OSB) web. Design properties of the JSI 20 I-Joists have been empirically determined in accordance with ASTM D5055-95a. The JSI 20 I-Joists vary in depth from 9 1/4 inches to 16 inches and are produced in lengths from 8 feet to 52 feet.

JSI 30, 40, 42 and 44 I-Joists are fabricated with solid sawn Spruce-Pine-Fir flanges with a minimum size of 1 1/2 by 2 1/2 inches and an oriented strand board (OSB) web. Design properties of the JSI 40, 42 and 44 I-Joists have been analytically determined in accordance with ASTM D 5055-95a. The JSI 40, 42 and 44 I-Joists vary in depth from 9 1/4 inches to 24 inches and are produced in lengths from 8 feet to 52 feet.

See Figure 1 of this report for a typical cross section of JSI I-Joists. See Figure 2 of this report for web hole size and location chart. See Figure 3 of this report for web stiffener requirements and a minimum bearing length for a given end reaction.

REQUIREMENTS:

Flange material shall be of solid sawn Spruce-Pine-Fir #2 for JSI 20 I-Joists and MSR 2100-1.8E for JSI 30, 40 and 42 JSI and 2400-2.OE for JSI 44 I-Joists. Where necessary the flanges shall be finger jointed in accordance with the National Lumber Grades Authority Standard SPS1-96 and each finger jointed flange shall be proof tested, as specified in the manufacturer's quality control manual.

Web material shall be a minimum of 3/8 inch thick OSB for JSI 20, 30, 40 and 44 I-Joists, and 1/2 inch thick OSB for 42 I-Joists. The OSB web shall be rated Exposure 1, as specified by Product Standard PS 2-95 titled performance Standard for Woodbased Structural Use Panels and the web joints glued.

All joints are made with exterior grade phenol-resorcinol adhesive conforming to ASTM D2559-92 and the adhesive shall be applied in a range of 7 to 19 percent wood moisture content in accordance with the manufacturer's instructions.

DESIGN:

JSI Joists shall be designed by a professional engineer using the physical properties and design capacities listed in Tables 1 and in accordance with ASTM D5055-95a. Plans shall show the loads, spans, joist sizes, framing, stiffeners, bracing, bridging, connections and cutting. Holes and openings cut into the webs shall be shown on the plans. Design calculations shall accompany the plans.

INSTALLATION:

Installation details shall comply with this report, the construction documents and the manufacturer's installation manual titled, JSI Handling and Installation Recommendations, dated June 1996.

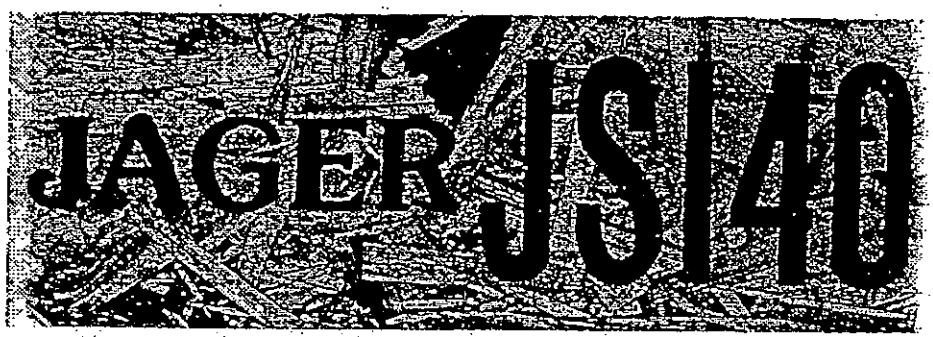
QUALITY CONTROL:

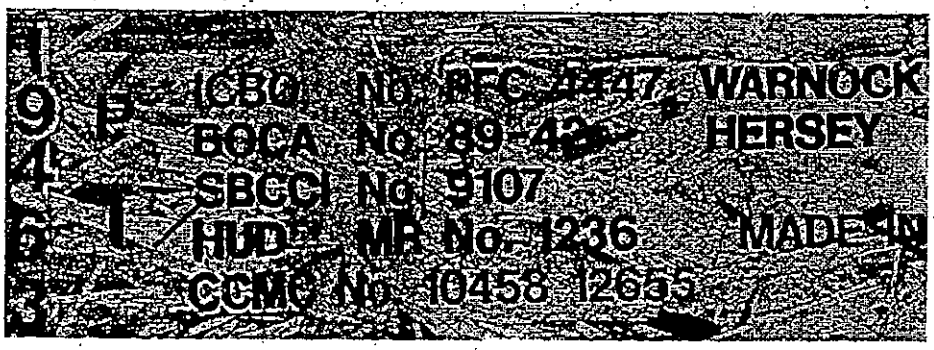
The quality control program for the Jager Industries I-Joists shall conform to the requirements of the Quality Control Manual for Jager Industries, Inc., dated March 1986, with the 6th revision dated August 1996, and is on file with HUD.

CERTIFICATION AND IDENTIFICATION:

Jager Industries, Inc. shall certify that each I-Joist conforms to the requirements of this MR. Each certified I-Joist shall be marked with the following:

a. Jager JSI.
b. MR No. 1236a.
c. The name and/or logo of the third-party quality assurance agency: WARNOCK HERSEY.
d. Five-digit registration number which represents the production date and lot number.





↑ Code Acceptance Numbers

↑ Plant Number

↑ Date Code

Typical I-Joist Identification Marks

WARRANTY:

Jager Industries, Inc. warrants the JSI joist against faulty performance resulting from faulty materials or workmanship in the manufacturing process for a period of twenty (20) years from the date of installation.

The liability of Jager Industries, Inc. under this warranty shall be limited to the replacement of defective members and the cost of installation or, at the option of Jager Industries, Inc., payment in lieu thereof.

The warranty is limited and applies to any material failure due to the manufacturing of the JSI joist. It does not extend to, nor will the manufacturer be liable for, any damage due to misuse, improper installation or any damage resulting from fire, lightning or other causes beyond the manufacturer's control.

This manufacturer's warranty does not relieve the builder in any way, of responsibility under the terms of the Builder's Warranty required by the National Housing Act, or under any provisions applicable to any other housing program. A copy of this warranty shall be furnished by the builder to the owner.

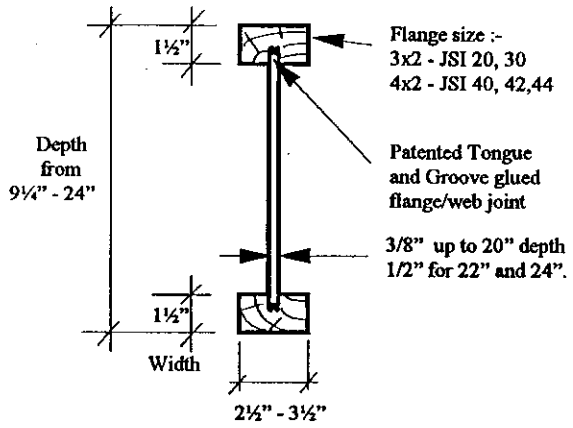
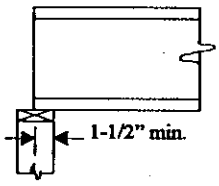
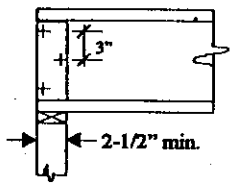
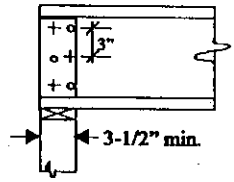
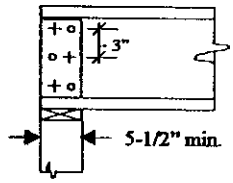
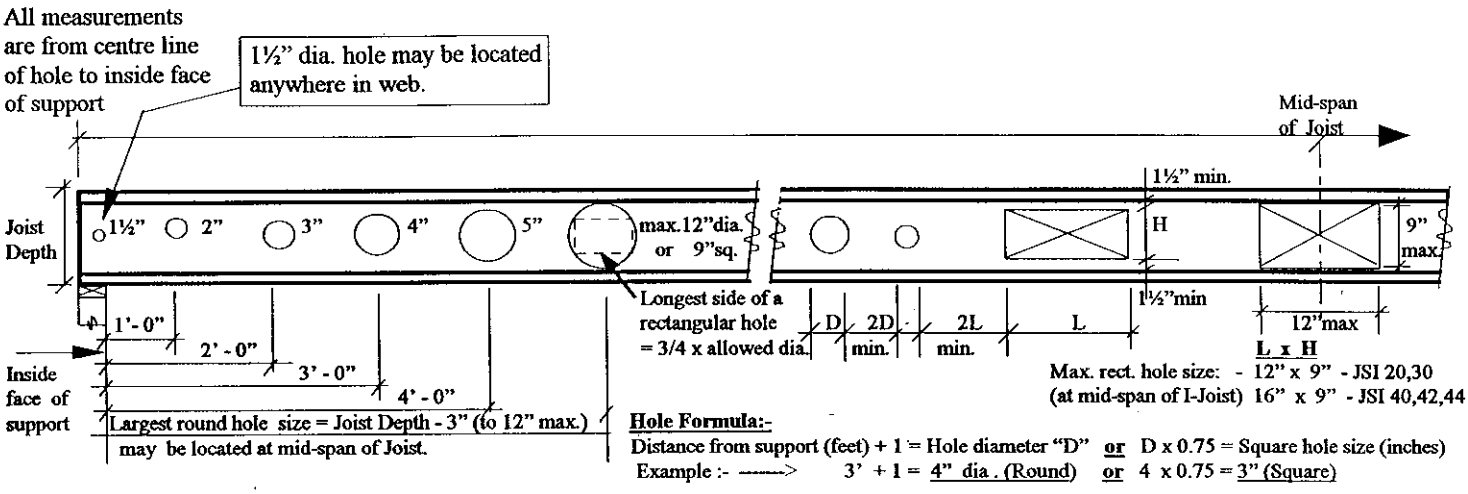


Figure No. 1 - Typical JSI® Joist Cross - Section

Web Stiffener Description	Number and size of Web Stiffeners						
	None	Width 2-1/2"		Width 3-1/2"		Width 5-1/2"	
Construction Details							
Joist Depth (in)	**Maximum allowable End Reaction or Point Load (lb)[6]**						
		1 - Stiff'r	2 - Stiff'r	1 - Stiff'r	2- Stiff'r	1 - Stiff'r	2- Stiff'r
9.25 - 9.5	1500	1900	2400	2100	2750	2400	3450
11.25 - 11.5	1400	1800	2300	1950	2650	2250	3350
11.875 - 12.5	1300	1650	2200	1800	2550	2100	3250
14	1200	1500	2100	1650	2400	1900	3150
16	1000	1350	2000	1450	2300	1600	3050
18 - 24	Not allowed	-	1500	-	1850	-	2250

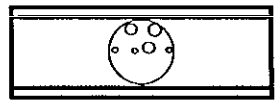
1. Use nails with length equal to twice the stiffener thickness. (i.e. 2-1/2" (8d) for 3/4" ply or 3" (10d) nails for 2x_) For 2 - stiffeners drive nails from each side. All nails are @ 3" o/c. in single or double rows as shown above.
2. 2 - web stiffeners (1 ea. Side of web) must be placed at interior **Point Load** locations.
3. 2 - web stiffeners must be used at supports for all JSI Joists equal or greater than 18" depth.
4. Multi-layers of plywood may be substituted for 2x4 web stiffeners.
5. Web stiffeners must fit flush to the bottom flange and have a small (max.1/8") gap at the top flange.
6. Reactions are based on 3/4" plywood and may be increased by 10% for thicker plywood or 2x lumber stiffeners.

Figure No. 2 - Web Stiffener requirements



Round Holes Allowable diameters are shown with minimum distances from the centre line of hole to the inside face of the support. The largest round hole size = Joist depth - 3" (maximum allowed = 12" dia.) may be located at midspan of joists.

Multiple Small Holes A group of small holes must fit inside a circle meeting the criteria for round holes above.



Square and Rectangular Holes The maximum length of a square or rectangular holes is 3/4 the diameter of the allowable round hole. The largest allowable hole (12" x 9"-JSI 20,30; 16" x 9"- JSI 40) must be located at the mid-span of joist. The minimum dimension to the inside face of the chords is 1½" except at mid-span where full web depth hole height may be used. DO NOT CUT or DAMAGE FLANGES.

NOTES :-

- If more than one hole is to be cut in the web the minimum clear distance between the holes must be twice the length (or diameter) of the larger adjacent hole. Round holes may be located vertically anywhere in the web; square holes must have minimum edge distances as noted above.
- **This hole chart applies only to joists with Uniformly Distributed Residential Loading.**
- For other load conditions contact your Local Jager Distributor or Sales Representative.

Figure No. 3 - Allowable Web Hole locations

TABLE 1

JSI Working Stress Design - Section Properties

Prepared:- May 31st 1996

JSI Depth (ins)	Chord Size & Grade	Moment Capacity (lb.ft)	"End" Shear Cap. (lb)	"Int." Shear * Cap. (lb)	I-Joist EI ($lb.in^2 x10^6$)	Self Weight (lb / ft)	Shear Defl'n "K" ($x10^6$)
9.25	3x2 JSI 20	2361	801	1036	155.84	2.16	9.93
	3x2 JSI 30	3109	885	1036	202.11	2.16	12.88
	4x2 JSI 40	4396	878	1036	284.21	2.72	13.18
	4x2 JSI 44	5414	877	1036	315.36	2.72	14.62
9.50	3x2 JSI 20	2429	827	1057	166.03	2.19	10.13
	3x2 JSI 30	3222	913	1057	215.28	2.19	13.14
	4x2 JSI 40	4556	906	1057	302.69	2.75	13.46
	4x2 JSI 44	5612	905	1057	335.86	2.75	14.93
11.25	3x2 JSI 20	2901	1009	1199	246.88	2.37	11.57
	3x2 JSI 30	4018	1113	1199	319.62	2.37	14.97
	4x2 JSI 40	5685	1104	1199	448.96	2.93	15.43
	4x2 JSI 44	7003	1002	1199	497.97	2.93	17.12
11.50	3x2 JSI 20	2968	1036	1219	259.80	2.40	11.77
	3x2 JSI 30	4132	1142	1219	336.26	2.40	15.23
	4x2 JSI 40	5847	1132	1219	472.28	2.96	15.71
	4x2 JSI 44	7202	1130	1219	523.80	2.96	17.42
11.875	3x2 JSI 20	3069	1075	1250	279.82	2.44	12.07
	3x2 JSI 30	4304	1186	1250	362.06	2.44	15.62
	4x2 JSI 40	6090	1175	1250	508.38	3.00	16.13
	4x2 JSI 44	7502	1173	1250	563.80	3.00	17.89
12.50	3x2 JSI 20	3238	1142	1301	314.91	2.51	12.57
	3x2 JSI 30	4590	1258	1301	407.25	2.51	16.25
	4x2 JSI 40	6497	1246	1301	571.61	3.07	16.82
	4x2 JSI 44	8003	1244	1301	633.84	3.07	18.65
14	3x2 JSI 20	3742	1302	1422	408.05	2.66	13.74
	3x2 JSI 30	5280	1433	1433	527.00	2.66	17.74
	4x2 JSI 40	7475	1418	1422	738.95	3.22	18.45
	4x2 JSI 44	9208	1415	1422	819.14	3.22	20.46
16	3x2 JSI 20	4413	1519	1586	552.09	2.88	15.24
	3x2 JSI 30	6203	1670	1670	711.79	2.88	19.65
	4x2 JSI 40	8784	1650	1650	996.64	3.44	20.58
	4x2 JSI 44	10820	1645	1645	1104.34	3.44	22.80
18	3x2 JSI 30	7128	1909	1909	925.71	3.09	21.47
	4x2 JSI 40	10097	1883	1883	1294.26	3.65	22.63
	4x2 JSI 44	12438	1877	1877	1433.53	3.65	25.06
20	3x2 JSI 30	8055	2152	2152	1169.24	3.30	23.22
	4x2 JSI 40	11413	2118	2118	1632.29	3.86	24.61
	4x2 JSI 44	14058	2111	2111	1807.19	3.86	27.24
22	4x2 JSI 42	12730	2387	2387	2037.80	4.77	33.86
24	4x2 JSI 42	14049	2633	2633	2466.89	5.05	36.06

* Interior Shear values used in the Multi program at bearings with joist continuity over.

MANUFACTURER'S RESPONSIBILITIES:

Issuance of this Materials Release (MR) commits the manufacturer to fulfill, as a minimum, the following:

1. Produce, label and certify the material, product or system in strict accordance with the terms of this MR.

2. Provide necessary corrective action in a timely manner for all cases of justified complaint, poor performance or failure reported by HUD.

3. When requested, provide the Manufactured Housing and Standards Division, Office of Consumer and Regulatory Affairs, HUD Headquarters, with a representative list of properties, in which the material, product or system has been used, including complete addresses or descriptions of locations and dates of installation.

4. Inform HUD in advance of changes in production facilities, methods, design of the product, company name, ownership or mailing address.

EVALUATION:

This MR shall be valid for a period of three years from the date of initial issuance or most recent renewal or revision, whichever is later. The holder of this MR shall apply for a renewal or revision 90 days prior to the Review Date printed on this MR. Submittals for renewal or revision shall be sent to HUD Headquarters. Appropriate user fee shall be sent to:

U.S. Department of Housing and Urban Development
Technical Suitability of Products Fees
P.O. Box 954199
St. Louis, MO 63195-4199

The holder of this MR may apply for revision at any time prior to the Review Date. Minor revision may be in the form of a supplement to the MR.

If the Department determines that a proposed renewal or supplement constitutes a revision, the appropriate User Fee for a revision will need to be submitted in accordance with Code of Federal Regulations 24 CFR 200.934, "User Fee System for the Technical Suitability of Products Program," and current User Fee Schedule.

CANCELLATION:

Failure to apply for a renewal or revision shall constitute a basis for cancellation of this MR. HUD will notify the manufacturer that the MR may be canceled when:

1. conditions under which the document was issued have changed so as to affect production of, or to compromise the integrity of the accepted material, product, or system,

2. the manufacturer has changed its organizational form without notifying HUD, or

3. the manufacturer has not complied with responsibilities it assumed as a condition of HUD's acceptance.

However, before cancellation, HUD will give the manufacturer a written notice of the specific reasons for cancellation, and the opportunity to present views on why the MR should not be canceled. No refund of fees will be made on a canceled document.

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This Materials Release is issued solely for the captioned firm, and is not transferable to any person or successor entity.
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